



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,154	01/11/2002	Ken Ishitobi	Q62628	5825

7590 05/11/2004

SUGHRUE MION, PLLC  
2100 Pennsylvania Avenue, WNW  
Washington, DC 20037-3213

EXAMINER
----------

METZMAIER, DANIEL S

ART UNIT	PAPER NUMBER
----------	--------------

1712

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/042,154

Applicant(s)

ISHITOBI ET AL.

Examiner

Daniel S. Metzmaier

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Claims 1-21 are pending. Claims 13-20 have been withdrawn as directed to an invention elected without traverse.

#### ***Response to Amendment***

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. Since the amendment has been entered and treated on the merits, the instant Office Action has herein been made Final. This action is clearly necessitated by the amendments.

#### ***Election/Restrictions***

2. This application contains claims 13-20 drawn to an invention nonelected without traverse in Paper October 1, 2003. A complete reply to the final rejection should include cancellation of nonelected claims.

#### ***Claim interpretation***

3. The following claim observations/interpretations are made here as they pertain to the following rejections. Claims 10-12 set forth the concentration of the polishing accelerator and sol product. None of the remaining claims set forth any concentrations of the components of the sol product. The broad language of the salts forming the sol product and the polishing accelerator overlap. The preamble sets forth a polishing composition and reads on compositions that have the function of polishing, ie, polishing properties.

The sol product is set forth as a mixture comprising the species set forth in (i) or (ii) of claim 1. Said claim employs open language and is open to further ingredients

including boehmite. Boehmite is a crystalline form of alumina and is commonly referred to as a sol or a slurry.

The claims are directed to a polishing composition comprising (a) water, (b) alumina crystal, and (c) a sol product. Said sol product is derived from an alumina salt and a base or chelating agent.

"Claims directed to products by process" are examined based on the product obtained rather than the method of making said product. The process limitations are given weight only to the extent the process limitation impart a patentable distinction to the product.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-7, 10-12 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nissan Chemical Industries, Ltd., WO 99/35089 (hereafter Nissan), as evidenced by Erikson, US 6,080,216.

Nissan (example 1, page 16, second full paragraph) discloses aqueous alumina slurries (characterized at paragraph bridging pages 9 and 10 to first full paragraph of page 11) employing a polishing accelerator comprising basic aluminum nitrate. Said basic aluminum nitrate would have been expected to have limited solubility and result in the formation of amorphous sol particles for at least a portion of the basic aluminum nitrate. Said sol products are derived from an aluminum salt.

Erikson is cited (column 13, line 60, to column 14, line 8) as evidence that the art recognizes solution-based compositions or sols are made by dissolving aluminum salts such as basic aluminum nitrate in water. The use of basic aluminum nitrate in the Nissan reference would have been expected to produce at least some sol particles as claimed.

Nissan (page 12, first full paragraph) discloses the polishing accelerator is employed in a concentration of 0.1 to 10% by weight. Nissan (page 10, fifth full

Art Unit: 1712

paragraph) discloses the concentrations of the alumina abrasive ranging from 0.5 to 20% by weight.

To the extent the Nissan compositions differ from the instant claims in the characterization of the accelerator as sol particles, said sol has not been shown to impart a patentable distinction to the compositions, which are employed the same components having overlapping concentrations thereof in the same utility, e.g., polishing.

8. Claims 1-7, 10-12 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamada et al, US 5,366,542. Yamada et al (example 2 and claims) discloses polishing compositions comprising alumina dispersed in water and in combination with aluminum salts and aminocarboxylic acid salts as chelating agents<sup>1</sup> and polishing accelerators. Patentees claimed concentration ranges for the salts and chelates reads on and is well within the instant claim 11 and 12 concentrations for the sol product.

Yamada et al (examples) discloses crystalline alumina dispersions employing a polishing accelerator of an aluminum salt and a chelate. The disclosed crystalline alumina for polishing is an  $\alpha$ -crystalline alumina dispersed in water and has a particle size of about 1.5 microns, reading on instant claim 21.

To the extent the Yamada et al compositions differ from the instant claims in the characterization of the accelerator as sol particles, said sol has not been shown to

---

<sup>1</sup> Applicants point out at page 16, first full paragraph of their response, the instant sols are formed not only by mixing the aluminum salt and the amino-carboxylic acid chelate compound but mixing by a high-shear stirrer. Yamada et al (example 2) employs said high shear mixer in formulating the polishing slurry

Art Unit: 1712

impart a patentable distinction to the compositions, which are employed the same components having overlapping concentrations thereof in the same utility, e.g., polishing.

Furthermore, the sol products are formed in the same high-shear mixing process as instantly disclosed. The same process would be expected to produce the same sol product. Applicants have proffered no evidence in rebut of said conclusion.

9. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nissan Chemical Industries, Ltd., WO 99/35089 (hereafter Nissan), as evidenced by Erikson, US 6,080,216, as applied to claims 1-7 and 10-12 above, and further in view of Peterson, US 5,669,941. Nissan discloses the compositions as set forth in the above rejections over the same reference. Said rejection is incorporated herein by reference.

To the extent Nissan differs from claims 8-9 in the species in the sol product, the Peterson reference teaches conventional dispersion aids for the advantage of improving dispersion stability.

Peterson (columns 15-18) discloses alumina sols and alumina particle dispersions. Peterson (column 17, lines 23-39) discloses dispersion aids including ammonium hydroxide, aluminum chlorides or basic aluminum nitrates. Peterson further teaches the concentration of each depends on the concentration and the surface area of the dispersed particles.

These references are combinable because they teach alumina sols and alumina dispersions. It would have been obvious to one of ordinary skilled in the art at the time

---

employing the salts and chelating agents of Table 2. Since the same materials are employed in the same

Art Unit: 1712

of applicants' invention to employ conventional dispersions aids as disclosed in the Peterson reference for the advantage of improving dispersion stability of the Nissan polishing slurries.

10. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al, US 5,366,542, as applied to claims 1-7 and 10-12 above, and further in view of Peterson, US 5,669,941. Nissan discloses the compositions as set forth in the above rejections over the same reference. Said rejection is incorporated herein by reference.

To the extent Yamada et al differs from claims 8-9 in the species in the sol product, the Peterson reference teaches conventional dispersions aids for the advantage of improving dispersion stability.

Peterson (columns 15-18) discloses alumina sols and alumina particle dispersions. Peterson (column 7, lines 23-39) discloses dispersion aids including ammonium hydroxide, aluminum chlorides or basic aluminum nitrates and the concentration depends on the concentration of the surface area of the dispersed particles.

These references are combinable because they teach alumina sols and alumina dispersions. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ conventional dispersions aids as disclosed in the Peterson reference for the advantage of improving dispersion stability of the Yamada et al polishing compositions.

---

process, the resulting product would clearly be expected to be the same.



***Response to Arguments***

11. Applicant's arguments filed April 16, 2004 have been fully considered but they are not persuasive.
12. Applicants (page 7) request withdrawal of the Finality of the rejection. Said Finality has been withdrawn. The instant rejection has been made Final.
13. Applicants have amended the claims, which now distinctly set forth separate components for components (b) as crystalline and (c) as amorphous. The references in the previous Office Action based on the overlap of components (b) and (c) have not been repeated. Applicants' arguments regarding said references are moot and have not been addressed herein. See for example page 11 bridging page 12 of the response.
14. Applicants (page 9) assert claim 21 now sets forth the particle size of the alumina crystal as 0.2 to 5 microns. Said micron particle size would be characterized as a slurry.
15. Applicants (second full paragraph, page 10) assert the basic aluminum salt cannot form an amorphous sol and in forming said sols alkalis are indispensable. While applicants' assertion may be true for acid salts, Nissan and Erikson employ basic aluminum nitrate, not the acid salt, i.e., aluminum nitrate. The alkali has already been added to the basic salt.
16. Applicants (pages 10 and 11) assert the instant comparative example 8 shows the mere addition of aluminum nitrate does not form a sol. This has not been deemed

Art Unit: 1712

persuasive since the instant comparative example 8 refers to aluminum nitrate,

$\text{Al}(\text{NO}_3)_3$ , rather than the basic aluminum nitrate,  $\text{Al}(\text{OH})_x(\text{NO}_3)_{3-x}$ .

17. Applicants (page 12) assert Nissan does not use an alumina sol in the final polishing slurry. Nissan clearly teaches (a) water and (b) alumina crystal within the size of 0.2 to 5 microns. Nissan discloses the further addition of basic aluminum nitrate, which is taught in Erikson to form sols by adding said basic salt to water, i.e., claimed component (c).

18. Regarding (pages 12 and 13) applicants' arguments pertaining to claims 10-12, Nissan discloses concentrations of basic aluminum nitrate well within the concentrations claimed. At least the minimum sol concentration of 0.01 mass % (100 ppm) would have been expected when employing basic aluminum nitrate at concentrations of 0.1 to 10% by weight, preferably 0.3 to 6% by weight.

19. Applicants (pages 14 and 15) assert the Nissan reference does not teach the sol in the final polishing composition. This has not been deemed persuasive because the Nissan reference teaches the addition of the salts as polishing accelerators. Said salts would have formed the sols of component (c).

20. Applicants (page 15) assert the Yamada et al reference exemplifies (example 2) micron-sized particles and refers to slurries rather than colloidal sols. Applicants' claims are directed to (a) water, (b) alumina crystal, and (c) a sol product. Newly added claim 21 defines the alumina crystals in the micron size range. The instant compositions would likewise be slurries by applicants' characterization of the prior art. None of the

other pending claims define any particle size nor do any of the claims define the sols as colloidal.

Furthermore, only claims 10-12 set forth concentrations of the polishing accelerator or sol product in the overall compositions. It is noted, said concentrations overlap. A number of methods of making alumina sols are known including those employing a mixture of an aluminum salt with a base and/or chelating agent.

21. Applicants (page 16) assert that to obtain the sol requires the use of high-shear mixing. Assuming *arguendo* that high-shear mixing is required, Yamada (example 2) discloses the use of high-shear mixing in the formation of the slurry and that said aluminum salt and chelating agent are incorporated into the sol. Said materials are implicitly incorporated with mixing. High-shear mixing is the only mixing disclosed. It is reasonable to conclude that the aluminum salt and chelating agent are incorporated into the slurry with high-shear mixing.

Furthermore, high-shear mixing at most merely decreases the particle size of the particles formed therefrom. Colloidal particles would be desired and expected for use of the slurry composition as a polishing composition.

22. Applicants' (page 16) arguments regarding boehmite are moot in view of applicants' amendment. Boehmite is known as a alumina crystal, component (b). The combination of the aluminum salt and the chelating agent in concentrations of 1.0 or 3.0 wt % and 1.0 wt % would have been expected to form at least some amorphous sol product or at least 100 ppm (0.01 wt%) of amorphous sol product. Said materials are made by the same process as applicants' sol products that are claimed.

23. Applicants (pages 16 and 17) assert Yamada et al discloses micron size slurries rather than sols. The micron-sized sols refer to the alumina crystal, which applicants defines as micron sized. Please see new claim 21.

24. Applicants (page 17) assert the examiner has offered no evidence that amorphous sol products are formed. This has not been deemed persuasive since the examiner has offered several references as evidence including a explicit teaching of making a sol product from aluminum salts. Furthermore, the prior art teaches the use of crystalline and amorphous particulate materials as polishing agents.

25. Applicants (page 18) assert the examiner's reference to "said components are clearly known as conventional additives in making polishing compositions for the advantage of stability" are unclear and it is unclear what are said components. Said components include the polishing accelerators and dispersion aids for alumina particle dispersions. Said materials are known to form sol particles as shown in Erikson. Peterson teaches common dispersion aids in particle dispersions such as those set forth in the Nissan and Yamada et al references.

26. Applicants (page 20) assert the skilled artisan would have no reasons to combine Peterson with the Yamada et al reference. This has not been deemed persuasive for the following reasons. "A prior art reference is analogous if the reference is in the field of applicant's endeavor or, if not, the reference is reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).", see MPEP 2145(IX). In the instant case,

Art Unit: 1712

Peterson shows analogous art and materials for improving the dispersion properties of dispersions in grinding.

27. Lastly, applicants assert the Peterson sols are not amorphous sols. This has been addressed above. It is the combination of the of the aluminum salt and the chelating agent in concentrations as polishing accelerators and/or dispersion aids that would have been expected to form at least some amorphous sol product or at least 100 ppm (0.01 wt%) of amorphous sol product. Said materials are made by the same process as applicants' sol products that are claimed.

### ***Conclusion***

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 1712

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (703) 308-0451. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.

  
**Daniel S. Metzmaier**  
**Primary Examiner**  
**Art Unit 1712**

DSM